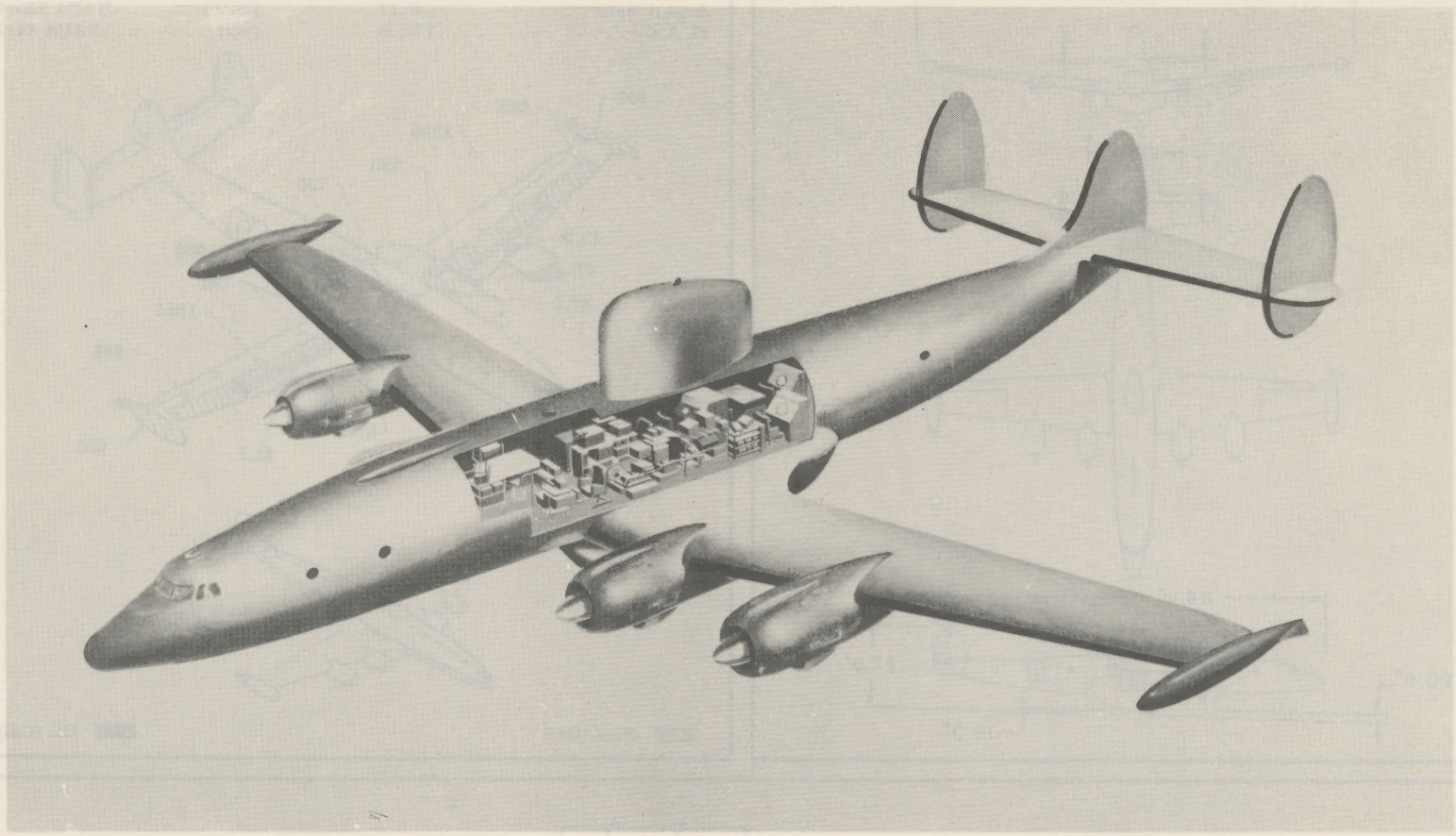


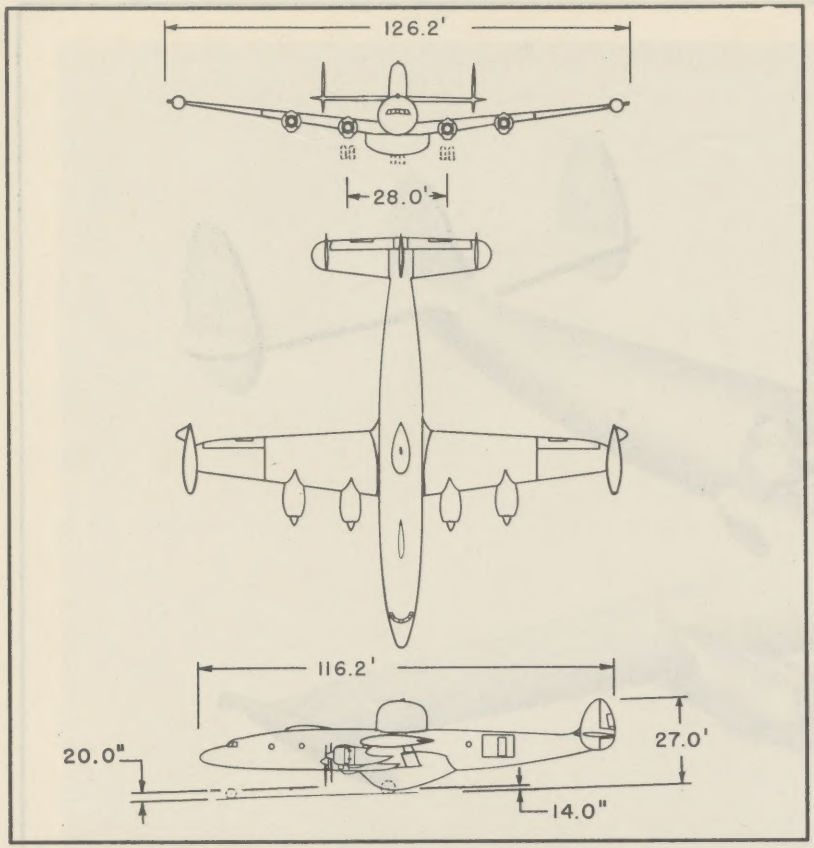
Standard Aircraft Characteristics

RC-121D

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

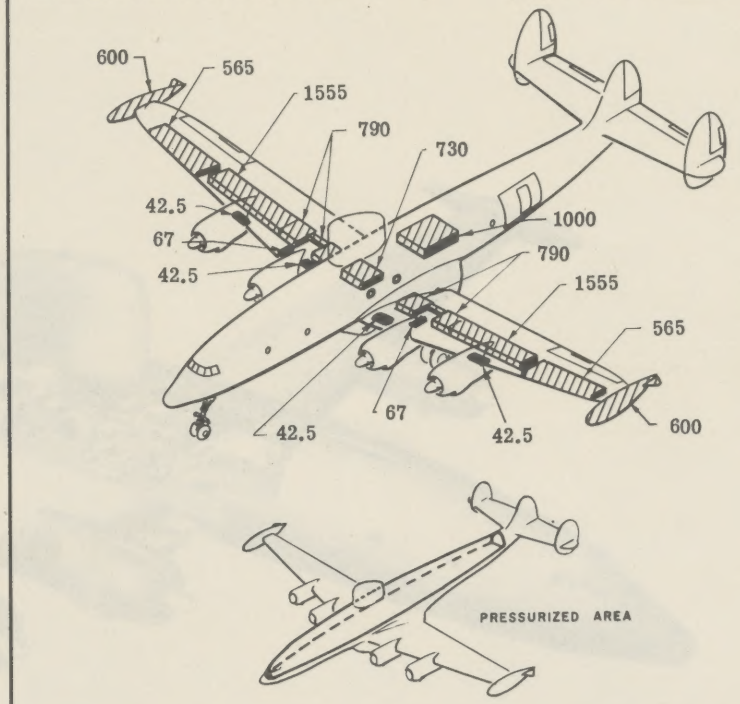
FOUR R-3350-34
(ALSO -91's)
WRIGHT

Lockheed



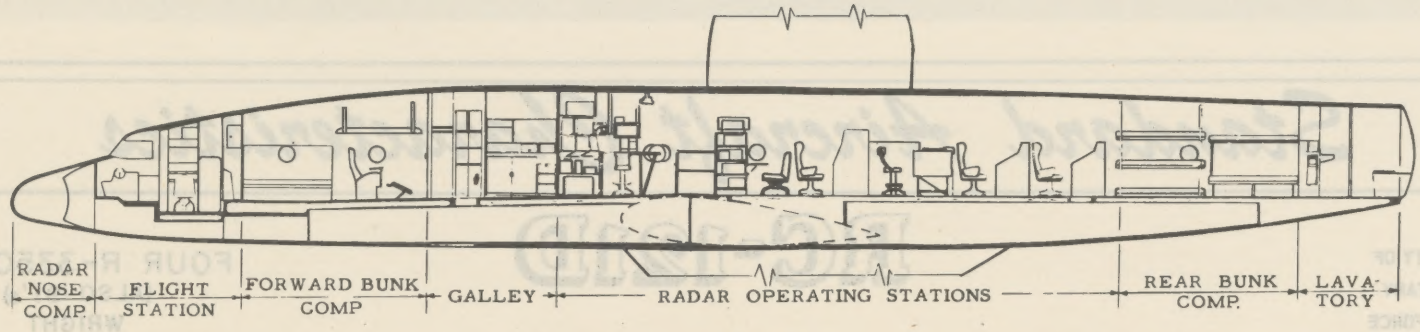
Wing Area . . . . . 1653.6 sq ft
Aspect Ratio 9.17
M. A. C. . . . . 176 in

Wing Section:
(root) . . . . . NACA 23018
(tip) . . . . . NACA 4412



Fuel (Gal)

Oil (Gal)



POWER PLANT

Nr & Model	(4) R-3350-34*
Mfr	Wright
Engine Spec Nr	N-872
Superch	1 stg, 2 spd
Red. Gear Ratio	0.4375
Prop Mfr	Hamilton Std
Blade Design Nr	6903B-O
Prop Type	Hydra, FF, Rev'r
Nr Blades	3
Prop Dia	15'2"

*AF55-118 & subsequent have -91 engines.

ENGINE RATINGS

	BHP - RPM - ALT - MIN
T.O:	3250 - 2900 - S.L. - 5
Mil:	3250 - 2900 - 5500 - 5
	2550 - 2600 -17,000 - 5
Nor:	2600 - 2600 - S.L. - Cont
	2650 - 2600 - 6500 - Cont

Mission and Description

Navy Equivalent: WV-2 Mfr's Model: 1049A-55-86

The principal mission of the RC-121D is to operate as an Airborne Early Warning (AEW) airplane and/or Combat Information Center (CIC).

As an Airborne Early Warning airplane, it is used to extend the range of radar detection beyond that available from land based stations to provide time to prepare defensive measures against hostile aircraft.

As a flying Combat Information Center, it is used to direct interceptor attacks on hostile aircraft or to relay information to ground stations.

This aircraft is equipped with the latest electronics including search radar, height finder radar, ECM equipment and radar relay transmitters. This equipment enables the aircraft not only to effectively search for and locate hostile aircraft and surface vessels, but also to determine the range and altitude of hostile aircraft. Removable wing tips are provided for installation when the tip tanks are removed. Wing tips are provided in each airplane as loose equipment. Alternate fuel source incorporated on AF 53-543 and subsequent.

Development

Similar to the RC-121C with the following exceptions: will be a production article rather than a modification, addition of wing tip tanks, increased fuel capacity and additional electronics equipment.

Contract date	Jan 52
First flight	May 54
First acceptance	Jun 54

WEIGHTS

Loading	Lb	L.F.
Empty	80,611(C)	
Basic	83,282(C)	
Design	130,000	2.50
Combat	*127,600	
Max T.O.(overload)	†143,600	
Max T.O.(normal)	‡130,000	2.50
Max Land	‡122,000	

(C) Calculated
* For Basic Mission
† Limited by space
‡ Limited by strength

FUEL

Location	Nr Tanks	Gal
Wg, outbd	2	1130
Wg, middle	2	3110
Wg, inbd	2	1580
Wg, ctr sec	1	730
Fus, aft	1	1000
Wg, ext	2	1200
	Total	8750
Grade		115/145
Specification		MIL-F-5572

OIL

Nac	4	170
Wg, stub	2	134
	Total	304
Grade		1100
Specification		MIL-L-6082

DIMENSIONS

Wing	
Span	126.2'
Incidence (root)	3°
(tip)	1°
Dihedral	7°36'
Sweepback (LE)	7°30'
Length	116.2'
Height	27.0'
Tread	28.0'
Prop Grd Clearance	20.0"
Radome Grd Clearance	14.0"

PERSONNEL

Places (max)	32
Crew (normal)	27
Pilot	
Co-pilot	
Flight Engineer	
Navigator	
Radio Operator	
CIC Officer	
Control Officers (5)	
Plotter	
Talker	
ECM Operators (2)	
Radar Operator	
Height Finder Operator	
plus	
Relief Crew (7)	
Technicians (3)	

ELECTRONICS

Search Radar	AN/APS-20B
Grd Positon Indicator	AN/APA-57B
Radar Indicator Equip	AN/APA-56
Radar Relay Transmitter	AN/ART-28
Radar Relay Receiver	AN/ARR-27A
Height Finder	AN/APS-45
IFF	AN/APX-6A
IFF	AN/APX-7
Liaison	AN/ARC-5
Radio Compass	AN/ARN-6
Direction Finder	AN/ARA-25
Liaison Receiver(3)	AN/ARR-15
HF Command Transmitter(2)	AN/ART-13
UHF Command (8)	AN/ARC-27

ELECTRONICS

Marker Beacon	AN/ARN-12
Radar Altimeter	AN/APN-22
Loran	AN/APN-70
Interphone	AN/AIC-10
Radar Indicator Group	AN/APA-81
ECM Pulse Analyzer	AN/APA-11A
Radar Counter Measure	AN/APR-4
ECM Receiver	AN/APR-9B
ECM Receiver	AN/ALR-5
IFF	AN/APX-25
Omni-Direction Recv'r	AN/ARN-14
Glide Path	AN/ARN-18
Oscilloscope Equip	AN/USM-25
Emergency Keyer	AN/ARA-26
ICS	Lockheed
VOR Receiver	AN/ARN-21
Radio Altimeter	SCR-718D
Tuning System	AN/ARA-19
Moving Target Indicator	

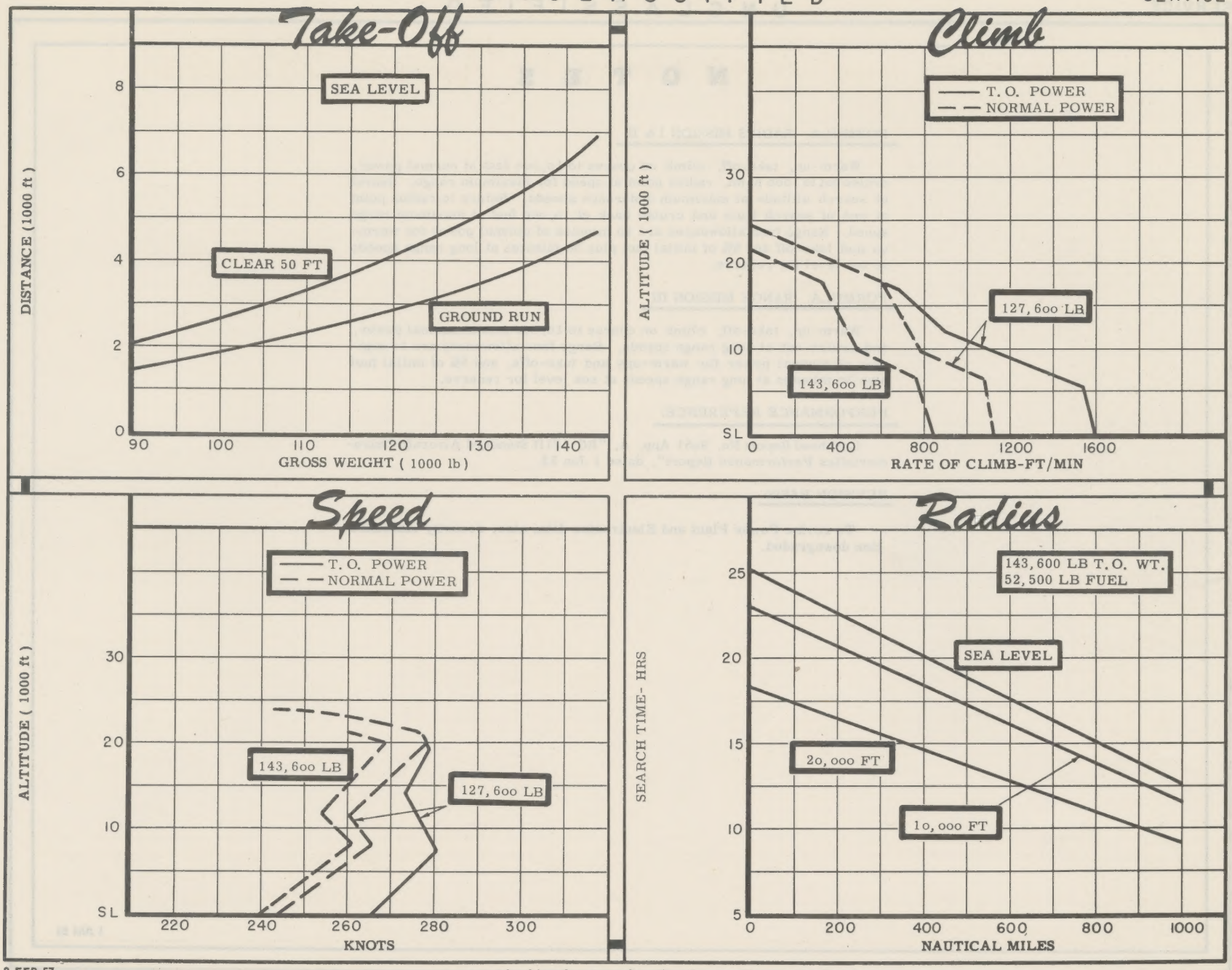
Loading and Performance—Typical Mission

CONDITIONS			BASIC MISSION	SEARCH	FERRY RANGE
			I	II	III
TAKE-OFF WEIGHT		(lb)	143,600	130,000	143,600
Fuel at 6.0 lb/gal (grade 115/145)		(lb)	52,500	39,864	52,500
Payload	(8)	(lb)	None	None	None
Wing loading		(lb sq ft)	87.0	78.8	87.0
Stall speed (power off)		(kn)	103	99	103
Take-off ground run at SL	(1)	(ft)	4540	3450	4540
Take-off to clear 50 ft	(1)	(ft)	6640	5000	6640
Rate of climb at SL	(2)	(fpm)	845	1075	845
Rate of climb at SL (one engine out)	(2)	(fpm)	305	490	305
Time: SL to 10,000 ft	(2)	(min)	13.6	10.6	13.6
Time: SL to 20,000 ft	(2)	(min)	42.6	27.3	42.6
Service ceiling (100 fpm)	(2)	(ft)	20,600	23,000	20,600
Service ceiling (one engine out)	(2)	(ft)	8200	13,000	8200
COMBAT RANGE	(3)	(n. mi.)	——	——	4013
Average cruising speed		(kn)	——	——	200
Initial cruising altitude		(ft)	——	——	10,000
Final cruising altitude		(ft)	——	——	10,000
Total mission time		(hr)	——	——	20.1
COMBAT RADIUS	(3)	(n. mi.)	1000	1000	——
Average cruising speed		(kn)	209	198	——
Initial cruising altitude		(ft)	10,000	10,000	——
Final cruising altitude		(ft)	10,000	10,000	——
Mission time	(6)	(hr)	10.0	10.3	——
Search time at SL	(7)	(hr)	12.6	7.6	——
Search time at 10,000 ft	(7)	(hr)	11.6	7.0	——
Search time at 20,000 ft	(7)	(hr)	9.2	5.5	——
COMBAT WEIGHT		(lb)	127,600 (4)	116,000 (4)	94,550
Combat altitude		(ft)	10,000	10,000	10.000
Combat speed	(2)	(kn)	263	266	271
Combat climb	(2)	(fpm)	780	1045	1640
Combat ceiling (500 fpm)	(2)	(ft)	19,000	21,500	26,000
Service ceiling (100 fpm)	(2)	(ft)	23,200	25,300	29,500
Service ceiling (one engine out)	(2)	(ft)	14,700	19,500	23,900
Max rate of climb at SL	(2)	(fpm)	1130	1395	2000
Max speed at 20,000 ft	(2)	(kn)	279	284	293
Basic speed at 25,000 ft	(2)	(kn)	262 (5)	266	281
LANDING WEIGHT		(lb)	94,550	92,954	94,550
Ground roll at SL		(ft)	2250	2210	2250
Total from 50 ft		(ft)	3300	3250	3300

NOTES

(1) T.O. power
(2) Normal power
(3) Detailed descriptions of RADIUS and RANGE missions are given on page 6
(4) Weight at beginning of search.
(5) Speed at service ceiling
(6) Does not include search time
(7) Time at 1000 n. mi. radius point
(8) Normal operating crew (27), 5400 lb

PERFORMANCE BASIS:
(a) Data source: Flight test of Navy WV-1
(b) Performance is based on powers shown on page 3.


Take-Off
SEA LEVEL
CLEAR 50 FT
GROUND RUN
DISTANCE (1000 ft)
0
2
4
6
8
90
100
110
120
130
140
GROSS WEIGHT (1000 lb)
Climb
T. O. POWER
NORMAL POWER
127, 600 LB
143, 600 LB
ALTITUDE (1000 ft)
SL
10
20
30
0
400
800
1200
1600
RATE OF CLIMB-FT/MIN
Speed
T. O. POWER
NORMAL POWER
143, 600 LB
127, 600 LB
ALTITUDE (1000 ft)
SL
10
20
30
220
240
260
280
300
KNOTS
Radius
143, 600 LB T. O. WT.
52, 500 LB FUEL
SEA LEVEL
20, 000 FT
10, 000 FT
SEARCH TIME- HRS
5
10
15
20
25
0
200
400
600
800
1000
NAUTICAL MILES

NOTES

FORMULA: RADIUS MISSION I & II

Warm-up, take-off, climb on course to 1o,ooo feet at normal power, cruise out to 1ooo n. mi. radius point at speed for maximum range. Search at search altitude at maximum endurance speeds. Return to radius point at end of search time and cruise back at 1o,ooo feet at maximum range speed. Range free allowances are 1o minutes of normal power for warm-up and take-off and 5% of initial fuel plus 3o minutes at long range speeds at sea level for reserve.

FORMULA: RANGE MISSION III

Warm-up, take-off, climb on course to 1o,ooo feet at normal power, and cruise out at long range speeds. Range free allowances are 1o minutes of normal power for warm-ups and take-offs, and 5% of initial fuel plus 3o minutes at long range speeds at sea level for reserve.

PERFORMANCE REFERENCE:

Lockheed Report No. 9o51 App. A, "RC-121D Standard Aircraft Characteristics Performance Report", dated 1 Jun 53.

REVISION BASIS:

To revise Power Plant and Electronics data; also, security classification downgraded.

1 JUN 53

SUPPLEMENTAL